CUSTOMER NO. 46850 *PATENT*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Attorney Docket No. Doshi 58-10-27-19-36

In re application of: Bharat T. Doshi, Zbigniew Marek Dziong, Ramesh Nagarajan, Muhhamad A. Qureshi, Yung-Terng Wang

Serial No.:	10/673,055	Group Art Unit:	2476
Filed:	09/26/2003	Examiner:	Chuong T. Ho
Matter No.:	990.0508	Phone No.:	571-272-3133

For: Restoration Path Calculation Considering Shared-Risk Link Groups in Mesh Networks

APPEAL BRIEF UNDER 37 CFR 41.37

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22213-1450

ATTENTION: Board of Patent Appeals and Interferences

This Appeal Brief is filed in response to the final office action of 01/14/2010 and further to the Notice of Appeal filed on 4/12/2010.

Real Party In Interest

The real party in interest is Alcatel-Lucent USA Inc.

Related Appeals and Interferences

None.

Status of Claims

Claims 1-4, 8-14, 18, and 19 are allowed. Claim 25 is objected to and would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Claims 20-24 are rejected. The claims on appeal are claims 20-24.

Status of Amendments

No amendments have been filed by the Applicant following the final rejection of 01/14/2010.

Summary of the Claimed Subject Matter

Independent Claim 20

Claim 20 is directed to a method for determining a minimum-cost restoration path corresponding to a new primary path for a new service in a mesh network having a plurality of nodes interconnected by a plurality of links. The method comprises, for each link of a specified set of links in the network: (1) assigning an initial cost to the link, (2) determining whether the link's bandwidth can be shared with a new restoration path for the new primary path, and (3) reducing the link's assigned initial cost when it is determined that the link's bandwidth can be shared with the new restoration path. The method further comprises calculating the minimum-cost restoration path for the new primary path using the specified set of links, wherein the cost of the minimum-cost restoration path is based on the sum of the costs of the links of the minimum-cost restoration path.

One exemplary implementation of an embodiment of the invention of claim 20 is described in Fig. 13 and the specification at page 32, lines 4-21. Fig. 13 illustrates an exemplary procedure for implementing step 1206 of Fig. 12, which is the step of calculating a minimum-

cost restoration path for a selected candidate new primary path. For the exemplary implementation illustrated in Fig. 13, the specified set of links is made up of the network links that were not previously excluded in step 1304. Each of the links in the set has had a link cost previously assigned by a method such as, for example, that illustrated in Fig. 10 and described in the specification at page 6, line 23-page 7, line 5. For each link of the set, it is determined whether the link's bandwidth can be shared with a restoration path for the selected primary path (step 1312).

If it is determined that the link's bandwidth can be shared, then the link's assigned initial cost is reduced by factor *R* (step 1318). After all the links in the set have been processed by having their assigned initial cost either (a) unchanged or (b) reduced by factor *R*, the exemplary method calculates a minimum-cost restoration path for the selected primary path using the new link costs (step 1320). A minimum-cost restoration path may be calculated by, for example, using procedures shown in Figs. 10 and 11 and described in specification at page 27, line 3 - page 28, line 16. The minimum-cost restoration path may be calculated by, for example, taking several candidate restoration paths, then calculating the path cost for each candidate restoration path as the sum of the new link costs of all the links of that candidate restoration path, and then selecting the restoration path having the least path cost.

Independent Claim 24

Claim 24 is directed to a network manager for a mesh network having a plurality of nodes interconnected by a plurality of links, the network manager adapted to determine a minimum-cost restoration path corresponding to a new primary path for a new service in the mesh network by performing the following two procedures. According to one procedure, for each link of a specified set of links in the network, (1) an initial cost is assigned to the link, (2) it is determined whether the link's bandwidth can be shared with a new restoration path for the new primary path, and (3) the link's assigned initial cost is reduced when it is determined that the link's bandwidth can be shared with the new restoration path. According to the other procedures, the minimum-cost restoration path for the new primary path is calculated using the specified set of links, wherein the cost of the minimum-cost restoration path is based on the sum of the costs of the links of the minimum-cost restoration path.

One exemplary implementation of an embodiment of the network manager of claim 24 would be adapted to perform the exemplary method described above for claim 20.

Grounds of Rejection to be Reviewed on Appeal

A first issue is whether the rejection of claims 20 and 24 under 35 U.S.C. 103(a) as unpatentable over U.S. Pat. App. Pub. No. 2003/0009582 A1 to Qiao et al. ("Qiao"), in view of U.S. Pat. No. 6,130,875 to Doshi et al. ("Doshi") is proper.

A second issue is whether the rejection of claim 23 under 35 U.S.C. 103(a) as unpatentable over Qiao in view of Doshi is proper.

Argument

1. Claims 20 and 24

The Applicant submits that the Examiner erred in the rejection of claims 20 and 24 by (1) misinterpreting the teachings of Qiao, (2) misinterpreting the teachings of Doshi, and (3) failing to show that the proposed combination would teach all the features of the claims 20 and 24.

Teachings of Qiao

Qiao purports to disclose a distributed control scheme for dynamic allocation and de-allocation of bandwidth (*see, e.g.*, Qiao Abstract). In rejecting claim 20, specifically, in pages 7-8 of the 1/14/2010 Office Action, the Examiner asserted the following:

a. That the step of "assigning an initial cost to the link" is disclosed in paragraph 113 of Qiao.

b. That the step of "reducing the link's assigned initial cost when it is determined that the link's bandwidth can be shared with the new restoration path" is disclosed in paragraphs 58, 61, and 67 of Qiao.

As an initial matter, the Applicant notes that paragraphs 58, 61, and 67 of Qiao are all in Qiao's invention-background section. On the other hand, paragraph 113 is in Qiao's detailed-description-of-the-invention section. In paragraph 113, Qiao discloses assigning each link a cost of w + B(w). Qiao's invention-background section makes no mention of reducing this w+B(w) link cost. The Examiner did not provide any explanation for how Qiao's background section can teach reducing an assigned link cost that first appears later in the detailed-description-of-the-invention section. The Applicant submits that whatever paragraphs 58, 61, and 67 of Qiao might

disclose, they cannot disclose anything about an assigned link cost that is introduced much later, in paragraph 113 of Qiao.

The Examiner asserted that paragraph 58 of Qiao teaches "minimizing the total amount of bandwidth equivalent by the new connection established request." First, the Applicant submits that this characterization does not make grammatical sense. Examiner's description of paragraph 58 notwithstanding, Applicant notes that paragraph 58 actually describes a so-called "No-Sharing scheme," in which, "As the name suggests, there is no bandwidth sharing among the backup connections when using this scheme" (emphasis added) (Qiao, paragraphs 57-58). Consequently, it cannot be said that paragraph 58 of Qiao teaches anything about sharing bandwidth or doing anything "when it is determined that the link's bandwidth can be shared."

The Examiner asserted that paragraph 61 of Qiao teaches "minimizing the total bandwidth consumed to satisfy the new connection request may be solved." Again, it is noted that this characterization does not make grammatical sense. Regardless of the Examiner's language, paragraph 61 actually purports to teach solving "the problem of minimizing the total bandwidth consumed to satisfy the new connection request" based on a given formulation. Minimizing the total bandwidth consumed by a new connection request is simply not the same as, or equivalent to, reducing, for each link of specified set of links, the link's assigned initial cost, let alone doing so when it is determined that the link's bandwidth can be shared with a new restoration path. Consequently, it cannot be said that paragraph 61 of Qiao teaches the above-quoted feature of claim 20.

The Examiner asserted that paragraph 67 of Qiao teaches "allows the new backup path to share maximum bandwidth with other existing backup paths." Rather than doing so, Paragraph 67 of Qiao really discloses two "major drawbacks" to the scheme for sharing bandwidth among backup paths that is described in the background section. The existence of schemes for bandwidth sharing among backup paths does not disclose reducing a link's assigned initial cost when it is determined that the link's bandwidth can be shared. As a result, it cannot be said that paragraph 67 of Qiao teaches the above-quoted feature of claim 20.

In summary, neither paragraphs 58, 61, and 67 nor any other section of Qiao, teaches reducing a link's assigned initial cost under any circumstances, let alone when it is determined that the link's bandwidth can be shared with the new restoration path. Consequently, it cannot be said that the cited references teach this requisite feature of claim 20.

Teachings of Doshi

In rejecting claim 20, the Examiner argued that Doshi teaches the feature of "calculating the minimum-cost restoration path for the new primary path using the specified set of links, wherein the cost of the minimum-cost restoration path is based on the sum of the costs of the links of the minimum-cost restoration path." In this regard, note that the Examiner cited Fig. 16B and column 30, lines 50-62, of Doshi as specifically teaching this feature. However, the cited sections refer to capacity, **not** cost. These cited sections say nothing about link costs, let alone a minimum-cost restoration path or the sum of the costs of the links of a minimum-cost restoration path. Thus, the rejection of claim 20 based on these cited sections is improper.

In view of the foregoing, the Applicant submits that claim 20 is allowable over the cited references. For similar reasons, the Applicant submits that claim 24 is also allowable over the cited references. Since claims 21-23 depend variously from claim 20, and claim 25 depends from claim 24, it is further submitted that those claims are also allowable over the cited references.

Claim 23

In rejecting claim 23, the Examiner argued that the combination of Qiao and Doshi teaches all of the claimed features of claim 23. In particular, the Examiner argued that Doshi teaches a method wherein (1) "a path pair cost is generated for each candidate primary path as the sum of the path cost of the candidate primary path and the path cost of the corresponding minimum-cost restoration path," and the method further comprises (2) "selecting (i) a candidate primary path from the set of candidate primary paths and (ii) the corresponding minimum-cost restoration path that together have the lowest path pair cost."

The Examiner cited column 33, lines 14-20, of Doshi as specifically teaching the above-quoted requisite features. The Applicant respectfully submits that the Office Action mischaracterizes Doshi. The cited section of Doshi actually discusses free capacities on links. Free capacities are not examples of path costs. Thus, the cited section says nothing about costs, let alone (a) generating a path pair cost as the sum of the path cost of a candidate primary path and the path cost of a corresponding minimum-cost restoration path or (b) selecting a candidate primary path and a corresponding minimum-cost restoration path that together have the lowest path pair cost. As a result, the rejection of claim 23 is improper.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 23 over the cited references.

Conclusion

In view of the foregoing, it is submitted that the Examiner is in error. It is, accordingly, respectfully requested that the rejection of claims 20-24 be reversed and the application passed to issue.

Respectfully submitted,

Date: 1-June-2010

/Edward J. Meisarosh/

Customer No. 46850
Mendelsohn, Drucker, & Associates, P.C.
1500 John F. Kennedy Blvd., Suite 405
Philadelphia, Pennsylvania 19102

Edward J. Meisarosh
Registration No. 57,463
Attorney for Applicant
(215) 599-3639 (phone)
(215) 557-8477 (fax)

Claims Appendix

The claims involved in the appeal are:

20. (previously presented) A method for determining a minimum-cost restoration path corresponding to a new primary path for a new service in a mesh network having a plurality of nodes interconnected by a plurality of links, the method comprising:

(A) for each link of a specified set of links in the network:

(1) assigning an initial cost to the link;

(2) determining whether the link's bandwidth can be shared with a new restoration path for the new primary path; and

(3) reducing the link's assigned initial cost when it is determined that the link's bandwidth can be shared with the new restoration path; and

(B) calculating the minimum-cost restoration path for the new primary path using the specified set of links, wherein the cost of the minimum-cost restoration path is based on the sum of the costs of the links of the minimum-cost restoration path.

21. (previously presented) The method of claim 20, wherein the specified set of links excludes links in the network that are not SRLG-disjoint from the links of the new primary path, wherein:

a shared risk link group (SRLG) is a set of two or more links, for which a failure of any one link in the SRLG is associated with a relatively high risk of failure of the other links in the SRLG; and

two links are SRLG-disjoint when they are not members of any one SRLG.

22. (previously presented) The method of claim 21, wherein the exclusion of links in the network that are not SRLG-disjoint from the links of the new primary path is accomplished by assigning an infinite initial cost to those links.

23. (previously presented) The method of claim 20, wherein:

the method is implemented for each of a set of candidate primary paths, wherein a path pair cost is generated for each candidate primary path as the sum of the path cost of the candidate primary path and the path cost of the corresponding minimum-cost restoration path; and

the method further comprises selecting (i) a candidate primary path from the set of candidate primary paths and (ii) the corresponding minimum-cost restoration path that together have the lowest path pair cost.

24. (previously presented) A network manager for a mesh network having a plurality of nodes interconnected by a plurality of links, the network manager adapted to determine a minimum-cost restoration path corresponding to a new primary path for a new service in the mesh network by:

(A) for each link of a specified set of links in the network:

(1) assigning an initial cost to the link;

(2) determining whether the link's bandwidth can be shared with a new restoration path for the new primary path; and

(3) reducing the link's assigned initial cost when it is determined that the link's bandwidth can be shared with the new restoration path; and

(B) calculating the minimum-cost restoration path for the new primary path using the specified set of links, wherein the cost of the minimum-cost restoration path is based on the sum of the costs of the links of the minimum-cost restoration path.

Evidence Appendix

None

Related Proceedings Appendix

None.